GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, SEPTEMBER 5, 1888.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Sentimental Objections to Felling Trees.—Irrigation in the Arid West.—Value of Iris pabularia 325
The Treatment of Slopes and Banks (with illustration) . . . . . *J. C. Olmsted.* 326
July on the Shores of Buzzard's Bay . . . . . *Mrs. Schuyler Van Rensselaer.* 327
A Bridge in the Thiergarten, Berlin (with illustration) 327
FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Goldring.* 328
NEW OR LITTLE KNOWN PLANTS:—Spiræa pubescens (with illustration) . . . *C. S. S.* 330
CULTURAL DEPARTMENT:—Cultivation of Native Ferns—II . . . *Robert T. Jackson.* 330
Early Apples . . . . . *E. Williams.* 331
Hyacinths for Forcing . . . . . *William Falconer.* 332
Notes from the Arnold Arboretum . . . . . *J.* 332
THE FOREST:—The Care of Woodlands 333
CORRESPONDENCE 335
RECENT PUBLICATIONS 335
NOTES 336
ILLUSTRATIONS:—Good and Bad Slopes, Fig. 51 326
A Bridge in the Thiergarten, Berlin 329
Spiræa pubescens, Fig. 52 331

Sentimental Objections to Felling Trees.

IT hardly needs special affirmation in these pages that a fine tree or group of trees is of itself an object to admire and to preserve with reverential care. And yet cases often arise when the removal of a noble tree is demanded on grounds distinctly higher and broader than those upon which the affection and respect for it are based.

It is our frequent inability to recognize such cases for what they are, and our unwillingness to act in them even when they are clearly recognized, which prove that our attitude towards trees is sentimental and irrational. Whether a tree is or is not a fine example of its kind is a question subordinate to the broader one whether it hurts or helps the general aspect of the scenery in which it stands, whether it enhances or detracts from the beauty of neighboring things; whether, in short, it stands where it ought to stand, or, on the contrary, where something else or nothing at all ought to stand. In almost every possible case a tree is a part of a larger whole, and it is a fundamental axiom in every search for beauty that the interests of the whole must take precedence of the interests of any of its parts.

If a group of trees is incongruous in form or color, and could be made harmonious by the removal of one or more individuals, there should be no question as to their removal, no matter what intrinsic claims they may have to admiration. It may often be a difficult task to decide which ones to sacrifice; but it is a task which should be entered upon without sentimental or superstitious compunctions. A bleeding stump may almost make a heart bleed for the moment, but this is a wound that will quickly heal under the influence of the increased beauty of the trees which remain. In like manner, when a single tree or a whole group is detrimental in a wider way, when it hides a still more beautiful tree or group, or a fine middle distance, or a lovely stretch of horizon; when it hides anything which would be of distinctly more value than itself in the scene, or when it gives an uncomfortable look of crowding and of excluding air and light, it should be sacrificed. And a like result will be sure to follow—quick forgetfulness of the vanished charm will follow upon the revelation of still greater charms.

It is impossible to take even the shortest walk abroad without seeing many places which would be vastly improved were one or more trees cut down. Yet even when the desirability of their removal is confessed by their owner, how difficult it is to persuade him to raise the axe! The house may be damp and dreary; other and perhaps still finer trees may be concealed from sight; all outlook upon a delightful prospect may be shut off; injury may be worked in a dozen different ways, and yet "because he loves the tree" it must remain. If he really loved trees and really cared for beauty in general, it would hurt him more to see the tree where it was palpably out of place than not to see it at all.

But if it were only when fine trees are concerned that this super-sentimental spirit was revealed, it would be easy, at least, to comprehend its existence. It appears, however, almost as often when the most ill-grown, feeble and ugly specimens are in question. For example, as has recently been pointed out in several letters published in these pages, hundreds of Norway Spruces, so far decayed that they are all but dead, disfigure our parks and cemeteries. No one professes to admire their condition or to believe that it has possibilities of improvement. Yet there is sure to be an outcry if a proposal to cut them is made. They are trees, and therefore sacred. The fact that the general effect would, in any case, be better without them, and that they are half-dead themselves, does not impair their sanctity or render the would-be cutter anything less than a heartless vandal.

It is the same in private grounds—one is daily driven to wonder why this or that perishing Spruce or Pine is preserved, and to accept in a spirit very far from acquiescent the answer that it is because the owner "is fond of trees."

It is quite time that unhealthy sentiment should give place to a genuine and sturdy respect for trees. There can be no true advance in the popular love for trees themselves until the public shall distinctly appreciate the difference between a fine tree and a poor one. And there can be no true advance in gardening art until we are clearly convinced that the beauty of a whole is more important than the beauty of any individual thing, and are firmly determined to act carefully and discreetly—yet boldly, too—upon this conviction.

The appropriation by Congress of $250,000 to be used to investigate the extent to which the arid western portions of the United States can be made fertile by irrigation, and for the selection of sites for reservoirs and other hydraulic works necessary for the storage of water for irrigation and for the preparation of maps in connection with this work, is a wise and proper one. It has already passed the Senate, and will probably be agreed to in the House. There can be no question of the wisdom of this investigation. It is the beginning of one of the most important works ever undertaken by the government of the United States. It is believed by Major Powell, the Director of the Geological Survey, that fifteen per cent. of the arid region within the limits of the United States, or an area of 150,000 square miles—that is, an area equal to more than one-half of the total area of the land now cultivated in the United States—can be reclaimed for agriculture and made to produce valuable crops permanently by means of irrigation. The promoters of this scheme must bear in mind, however, that the forests which cover, more or less densely, the mountain ranges of western America, from which the water for irrigating purposes must be brought into the valleys, are natural reservoirs; that they hold back water which would otherwise cause floods and torrents which no structure of masonry will be able to withstand; and that by checking evaporation, which consumes such a large part of the rain which falls on the western

interior portions of this continent, they largely increase its value. As long as Congress permits the devastation of our western mountain-forests to go on unchecked and unpunished, efforts to secure a comprehensive and permanent system of irrigation for the western States and Territories can never succeed. Reservoirs are valuable adjuncts to the forest in maintaining a water supply for large irrigating enterprises; but unless the forests are preserved, as an initial step, permanent and valuable results cannot be hoped for.

A recent issue of the *Revue Horticole* calls attention to the great value of the little known *Iris pabularia*, the *Krisham* of Cashmere, as a forage plant. This plant, it appears, will flourish in the driest and most arid soil, and once established it cannot be exterminated. The leaves, which attain a height of twelve to sixteen inches, are eaten by cattle either green or dried, the same plant producing two or three crops of leaves in a season. It is recommended that the seeds should be shown in beds, and then that the young plants should be set very early the following spring where they are to remain. They should be planted in rows ten inches each way if the soil is very poor, and fifteen to twenty inches apart in richer soil. A thorough watering will aid the plants to make a good start, should it be dry when they are set. It is doubtful if *Iris pabularia* will prove hardy in the Northern States, but it should certainly be tested in California, and in our dry south-western region, where, as well as in Florida, it may be destined to play an important part in the rural economy of all that part of the country. Seed can be obtained from the Messrs. Vilmorin, of Paris.

The Treatment of Slopes and Banks.

IT is a common mistake, where a road or a flat surface of turf is to be formed at a different elevation from that of the adjoining ground, to give the bordering banks too nearly the form of inclined planes, and to make them too steep, as at *a b c* in the diagram. Such slopes at the outset, while all about them is raw, are comparatively neat, and they can be formed cheaply by unskilled laborers, with little guidance or thought on the part of those in direction. They are objectionable, first, because it is difficult and costly to keep them in good order. On such steep slopes, the drainage is either too quick, in which case the grass upon them suffers from drought, or, on the other hand, subsoil water finds an outlet through the bank, making its surface soft and easily washed. Such a bank, therefore, needs to be protected by the best possible turf. But if the slope is in "kept" ground, it is difficult to form or maintain good turf upon it. Neither scythes, lawn-mowers nor rollers can be used to advantage, nor are manures apt to be evenly distributed upon it. Consequently, the turf soon falls into bad condition. If the ground is pastured, as is often desirable in case of a park-like treatment, cattle going up or down the slope poach and gouge it. In either case the grass soon grows in tufts, and the character of a continuous web of turf is lost. Storms wash out the soil between the tufts, and then freezing and thawing and further washings soon bring the whole surface to a sorry condition.

By lessening the inclination of the surface, difficulties of the class thus explained may be overcome. But there will remain, however, another and a more important objection to banks in the form of regularly inclined planes in most situations. They are stiff, formal and plainly artificial. Recognizing that they are so, it seems to be often supposed that the only revision of them necessary to a satisfactory result will be secured if a surface can be formed of a single, uniform, convex curved cross-section —like the front part of an upholstered, spring-seated sofa —made to meet the road or grass-plot at an abrupt angle, as one would trim down the edges of a pie before baking. (Shown by the line *d e* in the diagram.) Such a slope is really not less formal than an inclined plane. To make it less so, the top of the slope may be thrown back from its base further at some points than at others. But it will yet have a very unnatural aspect.

The reason of this is less difficult to understand than might be supposed, judging from the frequency with which such banks are seen in very costly works of landscape gardening, so-called.

A continuous body of good turf implies a continuous body of deep, friable soil. If the effect of a single rainstorm upon a body of such soil thrown up in a pile of convex section is carefully observed, it will be seen that a portion of the soil is washed out upon the adjoining level surface, obliterating the angle where the original slope met it, and making the lower part of the slope concave. (Shown by the lines *i j k* in the diagram.) The longer the bank of soil remains bare and subject to the wash of rain, the more it will spread at the bottom, and the less will remain of the original convex section.

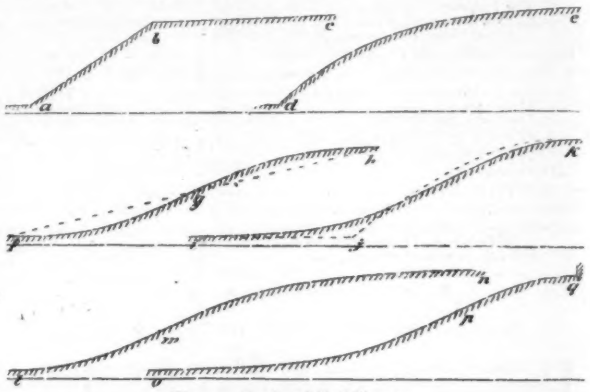

Fig. 51.—Good and Bad Slopes.

Further than this: as a natural bank of loam rarely occurs that is of uniform consistency throughout, the action of the weather upon it will seldom produce a curved slope of the same cross-section at all points, and its outlines will, consequently, become varied and informal.

The lesson to be learned from observation of Nature in this matter is that it is a safe general rule, in making a sloping bank, to give it an "ogee" cross-section. (An "ogee" is an architectural term, meaning a moulding the upper part of which curves outward and the lower inward, or, more broadly, any reversed curve, such as "Hogarth's line of beauty," used in school copy-books for the stems of many of the capital letters. It may be illustrated, in a practical way, by grasping a thin elastic rod with one hand at each end, and then bending one up and the other down.) The line *f g h* is a regular ogee curve, the concave portion *f g* being equal in length and shape to the convex portion *g h*. As a rule, the proportions of the curve should be varied from time to time, so as to produce an undulating surface—graceful, if grace is a quality to be desired in the locality, but in all cases informal and natural. A slope may have at one place a cross section like *l m n* in the diagram, in which the concave part of the slope *l m* is shorter than the convex part *m n*, while a short distance away the slope may resemble the line *o p q*, in which the relative importance of the concave and convex parts is reversed.

The diagram illustrates another principle in regard to slopes. If a broad, grassy surface had to terminate at a steep slope, falling to a road or fence, it would, presumably, be best to connect the broad surface with the steep one by means of a long convex curve, as at *m n*, completing the desired ogee slope by a short convex curve, as at *l m*. On the contrary, if the broad, grassy surface had to terminate at a steep slope rising to a fence, terrace, shrub border, or other marked boundary, the concave curve ought to predominate, as in the line *o p q*. In other words, the slope,

if open and grassy, in either case ought to appear to be a part of the larger surface of turf, unless there was some obvious reason to the contrary. In making a steep slope on the downhill side of a road, there ought to be, if possible, a nearly level space between the edge of the road and the beginning of the steep slope of from five to fifteen feet, partly to satisfy the eye as to a sense of danger of accidentally driving down the slope and partly to make it appear as if the road had been built upon a natural shelf or terrace. The latter reason applies equally to a slope on the uphill side of a road. In either case, the distance and shape of the slope should be varied from time to time, taking advantage of the configuration of the adjoining ground, or of the existence of rocks or trees, as suggestions for determining where to widen the space between the slopes and the road, or to make them more gentle. *J. C. Olmsted.*

Brookline, Mass.

July on the Shores of Buzzard's Bay.

COMPARED with central and western Massachusetts, this south-eastern portion of the state is, of course, deficient both in striking landscape features and in trees of noble size. One goes to Berkshire, not to Plymouth County, to find beautiful views, in the popular sense of the word, and finely developed specimens of trees of many species. Yet the true lover of landscape beauty, as well as the lover of nature's minor productions, does not fail of satisfaction here. Ours hardly looks like a sea-shore—it wears rather the aspect of the shore of a great quiet lake, for beaches are few and narrow, and almost everywhere vegetation comes close down to the salt water. But prettiness, if not grandeur, results from this fact; and even when the water is out of sight there is a great deal of charm in our moist meadows and sandy heath-like tracts, our thick, low-growing forests everywhere encircling tiny ponds or larger lakes, our ubiquitous, picturesque stone fences, and the low, unpainted gray cottages, which harmonize so well with them and with the character and tone of the landscape in general.

Our trees are few in number, and the two which are most prominent in the more westerly parts of Massachusetts—the Sugar Maple and the Elm—are wholly wanting, in a wild estate. White and Pitch Pines, Scarlet Maples, the northern Oaks, Gray Birches, a few Tupelos, an occasional Sassafras, and shrub-like Junipers—these are all we have; and few of them are of large size, for the woods are almost altogether "second growth," and in some places clearly show by the lines of overgrown stone-wall which intersect them that they cover what were once cultivated fields. Yet here and there one sees White Pines of grand build and no inconsiderable height forming stately groves devoid of undergrowth; and in all other places the young trees compensate by their graceful habit and felicitous intermingling for whatever they may lack in size.

The real richness of the district lies, however, in its shrubs and herbaceous plants. The Heath Family rules in the land and to say this is to say enough in its praise. The place of the long-vanished Mayflower is not unworthily filled in July by the Wintergreen. Huckleberries and Blueberries of many sorts, from the tallest to the lowest, hung out their exquisite white bells by myriads all through the first part of the month, while, as the season has been a late one, the Andromeda is but just past its prime. Mountain and Sheep Laurel have both been blooming in great abundance, and the latter—after a fashion which many flowers have hereabouts and which Mr. Burroughs once remarked upon—has been deep and brilliant in color to a degree seldom seen elsewhere. The White Azalea is going, after having filled the swamps for weeks with its incomparable perfume, but Clethra is fast getting ready to fill its place. Several Pyrolas are now in bloom, the most abundant being the Shin-leaf; the two Chimaphilas are flowering; and those who like the corpse-like Indian Pipe may find it in abundance.

These are by no means all our *Ericaceæ* nor are the *Ericaceæ* our only boast among blossoming shrubs. The four species of Ilex—Holly, Black Alder, Ink Berry and *I. lævigata*—are just dropping their pretty white blossoms. The Viburnums are covered now with green fruit which will soon grow pink on its way towards blackness, and be, for awhile, almost more effective than flowers. The Buttonbush is in bud, mingling everywhere with the Alder clumps. The day of the Elder-blossoms is not yet quite past and we have them in abundance, while nowhere could one find Wild Roses with flowers more thickly crowded or richer and deeper in hue. Two Spiræas—Meadow Sweet and Steeplebush—are everywhere; and, in short, the only shrub one misses for which one looks on the New England coast is the Barberry, which, common further north and also in Connecticut, seems to have passed us entirely by in its welcome work of colonization.

As for our herbaceous plants, maritime and other, their list is too long to tell, even although August rather than July is their time for flowering in greatest variety. One of the prettiest is the Spreading Dogbane (*Apocynum androsæmifolium*), with its blood-red leaf stalks, and drooping, white, bell-shaped flowers. The Tall Meadow Rue is still in bloom, and with it one occasionally finds the curiously ill-scented form of the purple Thalictrum (var. *ceriferum*). The Virginia Anemone occurs, but less finely developed than further west. *Lilium Philadelphicum* is just going out of flower as the great Turk's Cap Lily is coming in. A month ago the low grounds along the shore were blue with two species of Iris, and their humbler cousin, the Blue-eyed Grass. To-day they are spotted with the yellow Star Grass, and spiked with the tall white Aletris. It is a great country for Milkweeds, for Compositæ, for Evening Primroses, for Potentillas, and, of course, for Rushes and Sedges. Several Polygalas are now in blossom and the pretty little wild Flax. And as for Orchids, we have just had meadows pink over broad spaces with Calopogons, intermixed with which were spikes of the still more graceful and lovely pink Pogonia. Two or three greenish Habenarias are coming into flower, and our white one (*Habenaria blephariglottis*, var. *holopetala*) will soon be present in large quantities, together with, in lesser quantities, both species of *Goodyera*.

There is nothing new or striking, I know, in this catalogue, and perhaps its greatest interest may lie in the fact that I confess it so incomplete as to be hardly a catalogue at all—for wha tI wanted to show was that, unassuming though our district is, there is good reason for our liking it so well. The only thing I have to note which may be unexpected, is that in addition to the common Green-brier—*Smilax rotundifolia*—*S. glauca* grows here in great abundance, although by rights (I mean according to Dr. Gray) it should not venture further north than southern New York. Even this is hardly news, as the plant had already been found by Mr. C. E. Faxon on Blue Hill, near Boston; and even if it were news I could not claim the credit of the discovery. It would belong to a haunter of these woods whose eyes are a good deal keener than mine. It may be worth while to add that our Pines, which last year bore no seed, are this year full of ripening cones—both the White and the Pitch Pines. *M. G. Van Rensselaer.*

Marion, Mass.

A Bridge in the Thiergarten, Berlin.

THE *Thiergarten* in Berlin is, without doubt, the finest large public park in Europe, and it seems doubly beautiful and valuable as it forms a veritable oasis in the flat, sandy and generally treeless surroundings of the German capital. It was laid out in accordance with the plans of Knobelsdorf, the architect of Frederick the Great, about the middle of the last century, and, in accordance with the taste of the time, partly in a formal way. An open space, peopled with many statues, which was called "The Star," because it was the meeting point of a number of straight-lined alleys, formed its central feature. But the

largest portion of it was, nevertheless, left in forest, and the alterations subsequently effected have consistently looked towards the preservation and development of its natural charms. As it now appears, it is the model of what a great public park, to be used by the inhabitants of a populous city, should be—amply provided with spacious concourses, drives and promenades, adorned with works of sculpture, many of which are indeed intrinsically poor, but almost all well placed and appropriately environed, and yet, over the greater part of its surface, presenting to the eye a constantly varying succession of natural-seeming landscape effects. No contrast could be greater than that presented by the most formal and the most natural portions of this park. Here we have the long, straight drive, which leads from the Brandenburg Gate to the confines of the suburb of Charlottenburg, and there deep, bosky glades, wild-looking little lakes, or passages of forest scenery apparently as untouched by the hand of man as though the city were a hundred miles away. Yet there is no disharmony between part and part, for the transition from one to another is rightly managed, and instead of an impression of unmotived diversity, we gain an impression of unity in variety.

The illustration herewith given is from a photograph which represents, not one of the wildest corners of the *Thiergarten*, yet one in which, although the work of man conspicuously appears, natural character has not been destroyed. The bridge, called the "Lion Bridge," from the figures which support it at either end, serves for foot-passengers only, and if less beautiful than some others, is interesting as showing that at least a comparative degree of beauty and an air of simplicity and appropriateness to rural surroundings are not impossible of achievement by the use of iron. The natural development of the trees has in no way been interfered with, and the vista of distant plantations, which the space between them affords, is much more beautiful than could be shown in a picture of this size. But the chief point to which we wish to call attention is the management of the water. Too often we see the streams and pools in parks brought into more or less formal shapes and bordered with a stiff line of stone or concrete; or, even when this is not the case, kept "tidy" by constant interference with the natural growth of the grasses or shrubs which border them. Formally shaped and bordered ponds have, of course, their place—as elements in a design the general character of which is formality. But when a natural landscape aspect is desired, the water should be as naturally treated as the ground. In this picture we see the results of such treatment, partly due, of course, to natural causes, but partly, no doubt, to intelligent, fostering care. No words are needed to explain how beautiful are the irregular borders of this pool, and the rich, encroaching growths of its aquatic plants. To produce, or to preserve, such effects as these, is the highest art when harmony permits them—it is the art which conceals art, and thus equals or surpasses Nature herself in the impression it produces.

Foreign Correspondence.

London Letter.

INCESSANT rains have played havoc with out-door gardens; flowers are not only later by a fortnight or more, but the crop of bloom, except on hardy shrubs, has been poor. Strawberries have been almost a total failure, and bush-fruits, especially Raspberries, are a poor crop, and insipid in flavor. A wet summer, however, is not an unmixed evil, and we shall enjoy the benefit of it next season, for out-door vegetation of every description is growing in a marvelous way. Ornamental trees and shrubs are making such growth as we have not seen for years, and large fruit trees, though, as a rule, borne down with fruit, are forming vigorous shoots,

Under glass the effects of a sunless sky for weeks in succession are not so apparent, and this is particularly noticeable in the great gardens and nurseries, where a large variety of plants is grown. Our great national garden at Kew, for instance, has been greatly benefited by the wet season, and both in the open air and in the houses I have never seen the vegetation look finer, and even at the present time, when the flower season is usually considered on the wane, the gardens beam with beautiful, rare and new plants in flower, so numerous that I shall devote the present letter to mentioning some of the most noteworthy among them.

Among the Orchids a few rarities are in bloom, the choicest and most beautiful being *Sobralia leucoxantha*, a new species of which only about half a dozen plants are said to be in the country. In growth it resembles the dwarf form of *S. macrantha*, and the flower is almost as large being four or five inches across. The sepals are snow white, as are also the petals, which are broader, while the labellum has a circular lobe exquisitely frilled, and of a bright, clear yellow. Its flowers differ from those of the other new Sobralia, *S. xantholeuca*, the sepals and petals in the latter being yellow, while the centre only is white. Like its relative, the common *S. macrantha*, it succeeds well in the Cattleya house. The charming little *Phalænopsis Mariæ*, which was discovered by Mr. Burbidge while traveling for the Messrs. Veitch, is in bloom. It belongs to the Sumatrana section; has long, green leaves and short spikes of small flowers. Their color is white, heavily blotched with coffee-brown, and with a narrow, filose labellum stained with purple or amethyst. It is also one of the rarest species. I ought to mention the wonderful success obtained at Kew in flowering the great moth Orchid, *P. grandiflora*. A few years ago this could not be even grown in a healthy state, but now it grows like a weed and flowers abundantly. The plants are grown in upright cylinders about a foot high, made of strips of teak wood, and filled with drainage-material, with only a little compost of peat-moss and charcoal at the top for the plants to get a root-hold in. The specimens in some of the cylinders carry five spikes, with from twelve to eighteen flowers on each. This magnificent display, numbering two to three dozen spikes in all, has been enjoyed for the past two months. The little Cypripediums of the niveum group are in flower together, and one may see what affinity there is between *C. niveum*, *C. concolor*, *C. Godefroyæ* and *C. bellatulum*. Though they merge, as it were, into one another, there is no question but that they are distinct from the gardener's purpose. *C. bellatulum* is very heavily spotted, and is a rounder flower than that of the *C. Godefroyæ*, and is, therefore, at once distinguishable.

A rare Ipomæa, named *I. Hardingei*, is in bloom in the tropical Water-Lily house, and a very beautiful plant it is. This is said to be a hybrid, one of its parents being the common *I. paniculata*. The flowers are similar in size, color and form to those of the parent, but the leaves, instead of being digitate, are bilobed, larger and hairy. It is a rapid growing stove-climber, and is capable of garlanding a roof or pillar in a charming way.

A new water plant, *Eichornia tricolor*, is in flower at Kew for the first time. In habit of growth it closely resembles *E. azurea*, the leaves being cordate, bright green, and with swollen petioles, but the flowers are not so fine. The lower petals are rich purple, the upper ones pale blue with yellow centre, and are borne on erect spikes about two feet high. On seeing it I at once compared the flower with those of the common *Schizanthus pinnatus*, the resemblance being very striking. It is only valuable for growing with tropical Water Lilies and other aquatics.

A tropical bulbous plant, *Hæmanthus Katharinæ*, is now in full flower, and a more brilliant or imposing summer flowering bulb for the stove is not in cultivation. From the great globular bulb it sends up a stout stem bearing

numbers of broad, long leaves, and overtopping these is the huge head of flowers, like a half globe of scarlet stars bespangled with golden tipped stamens which protrude from them. It lasts in bloom for some weeks, and amidst the usual surrounding greenery of a plant-stove stands out a conspicuous object. It came from the west coast of Africa, and therefore delights in heat and moisture in its growing season. It is certainly a plant to note by those who look for brightly-flowered stove plants in August. Another highly commendable stove bulb is *Crinium giganteum*, from the same region. Its flowers, produced in an umbel of from five to eight on a stout stem from two to three feet high, are nearly six inches across, pure white and with a fragrance like that of vanilla. It is of the easiest culture, and remains in bloom for weeks. Its specific name is misleading, as there are several Criniums to which this would be a pigmy in size.

Of quite a different type of beauty is the *Milla biflora* from Mexico. It is a slender growing plant, with narrow, grassy foliage and wiry stems rising about a foot high and carrying one or more flowers. These are about two inches across, perfectly star-shaped, of snowy whiteness and fragrant. It is very beautiful, and lasts in beauty a long time during the present month. At Kew it is grown in pots, and treated as an ordinary half hardy bulb, as it has been found useless to plant it in the open ground. It is quite worthy of any extra attention bestowed upon it.

Another green-house bulb of surpassing brilliancy is a variety of the common *Vallota purpurea* named magnifica. It is altogether larger than the type in bulb and leaf, has a taller and stouter flower-stem, and flowers nearly twice the size. They are funnel-shaped, of a glowing vermilion, with conspicuous white centre. It carries three or more flowers on each stem, and has been in bloom for a month past. Similar to this variety, but not so fine, is that named eximia, and there is another called major, all of which will, perhaps, in course of time, be grown in place of the old sort.

Among other flowers of the week here worth noting are the following: *Impatiens Hookeri*, the new tropical Balsam sent out recently by Mr. Bull. It is in all respects a stove plant of the first rank, easily grown, of vigorous habit and a profuse bloomer. The flowers are large and of a brilliant carmine-magenta. Like its relative, *I. Sullani*, it is already largely grown in this country, and may be found in all the best gardens. Another of Mr. Bull's recent introductions is *Aristolochia elegans*, one of the prettiest in flower and most elegant in growth in the genus, and while most of the species are too large for ordinary houses, this may be grown as a small trained pot-plant. The peculiar shape and strange color of its flowers make it an object of interest in a plant-store. Those who want a continuous and abundant crop of cut flowers should get the Bolivian Dipladenia (*D. Boliviensis*). Its large, funnel-shaped flowers are snow-white, with only a blotch of orange in the centres. The plant is a climber, graceful yet vigorous, and continues in bloom for weeks in succession. This and the lovely little *Passiflora Kermesina*, of which I lately made a note, are two of the best stove-climbers, and if planted close together they add to each other's charms. In the green-house one of the best climbers is *Rhodochiton volubile*, an awkward name for a most exquisite plant. At this season it festoons the rafters or pillars of a cool green-house with wreaths of purple, bell-like calyxes, with deep crimson—almost black—corollas. It is of the simplest culture in large pots or when planted out in free soil.

A Bridge in the Thiergarten, Berlin.—See page 327.

One of your delightful Magnolias, *M. glauca*, or Swamp Laurel, has been in bloom for a month past, and the beauty of its ivory white cups and its delicious fragrance are a surprise to us. Our wet weather has apparently suited it, for I have never seen it so fine as it is this year. Uusally the flower buds become scorched on dry soils before they have time to expand.

London, August 8th, 1888. *W. Goldring.*

New or Little Known Plants.

Spiræa pubescens.

THIS dwarf Spiræa is a decided acquisition to gardens, flowering, as it does here, from the tenth to the fifteenth of May, or two or three weeks earlier than the well-known *S. triloba*, which it resembles in habit, although smaller in all its parts. Its flowers, as are those of that species, are produced in dense, umbellate corymbs from the ends of short, lateral, leafy branches of the year, and quite cover a considerable portion of the main stems. These are slender, terete, zigzag, slightly pendulous, two or three feet high, the shoots of the year densely covered with pubescents. The leaves are ovate-acute, sharply serrate above the middle or somewhat three-lobed, puberulous above and densely villous-pubescent on the under surface, especially on the midrib and two or three principal veins. The inflorescence, as pointed out by Maximowicz, is quite naked, with the exception of a line of hairs on the ventral sinus of the follicles. This plant must not be confounded with the *S. pubescens* of Lindley, which is referred by Maximowicz to *S. Chinensis*, which is considered by Mr. Hemsley the same as the *S. dasyantha* of Bunge, of which he remarks, "*S. pubescens* is certainly very closely allied, yet easily distinguished by its narrower, less distinctly veined leaves, having longer hairs on the under surface, and glabrous flowers."

S. pubescens * is a native of the mountains of northern China and Mongolia. The plant from which our illustration on the opposite page was made, flowered in the Arnold Arboretum this year for the first time. It was raised from seed sent some years ago, by Dr. Bretschneider, from Pekin. *C. S. S.*

Cultural Department.

Cultivation of Native Ferns.—II.

SOME very delicate native Ferns which are difficult to cultivate do well grown in pots and wintered in a pit. In summer such potted Ferns may be sunk in a bed of coal ashes in a shady place. A frame for potted Ferns, alpine plants, etc., which has proved successful, is made as follows: A large shallow box, with loosely fitting bottom, is raised on logs about ten inches from the ground. Stones, broken crocks, etc., are laid on the bottom of the box to the depth of several inches, then covered with several inches of sand. The pots are sunk in the sand. This gives perfect drainage, which is a primal requisite, and no earth worms get into the pots on account of being raised from the ground.

In potting Ferns use plenty of broken crocks for drainage. The mixture of soil advised by Mr. John Robinson is peat, leaf mould from the woods, mason's sand and virgin loam, equal parts. He says cocoanut refuse may be used instead of leaf mould. The admixture should be light and porous, with no tendency to hold stagnant water. It should not be sifted. Charcoal broken in bits and crushed is a good thing to mix with soil for Ferns, as it tends to counteract any injurious results from excessive moisture.

Few of the Ferns we have to consider require pot-culture, and for more detail on this subject the reader may profitably consult Mr. Robinson's book on Ferns—referred to in the first article of this series.

It is often desirable to establish in pots choice Ferns which have been collected, before planting them in the open ground, especially if collected at a very unseasonable time. Much pleasure may be derived from fine native Ferns potted and kept in the house for summer decoration. Onoclea, Struthiopteris, the Osmundas, large species of Aspidium and Adiantum, are particularly suitable for this purpose.

In cultural directions, a word should be said about rockeries. Rockeries, as commonly made, are unsatisfactory. They are too apt to be made of rocks with a little soil, whereas they should be large bodies of soil, with rocks buried and cropping out on the surface. Rockeries are frequently built to a considerable height above the surface of the adjacent soil; in fact, much too high, as they then require excessive watering to prevent their drying up. For a small rockery of four to eight feet in width twelve to eighteen inches, or, at most, two feet, is quite high enough for the highest parts. That is quite sufficient to give the varying elevations desirable for different kinds of Ferns and to give a pleasing effect.

All of the Ferns considered, except those specially noted, can be grown perfectly well without rocks, and in so far they may be considered superfluous. In my garden there is no rockery, properly so called. Stones and rocks of considerable size, however, may be laid on the ground and half buried in Fern-beds, giving a good effect and helping materially to retain moisture by covering the soil.

The moist, cool surface of rocks makes a grateful surface along which the roots of Ferns, and other plants as well, like to creep. At the Botanic Gardens in Cambridge, some delicate species, such as *Asplenium viride*, *Pellæa gracilis*, etc., are grown very successfully in niches of rock-work, with very little soil, although plentifully supplied with moisture, and covered with sashes in winter.

Rocks may be used with great advantage and moderate cost on a natural bank or steep incline, and in such places are most admirable.

Directions for making rock-works are to be found in Robinson's "Alpine Flowers." *

It is to be understood that we are considering rockeries for growing Ferns and for small garden effects, not rockeries of sufficient dignity to give landscape effects; for these special studies are required.

The propagation of Ferns of the class under consideration is generally an unimportant affair, as they are, for the most part, comparatively easily obtained from the woods. They may be propagated by dividing the crowns or running root-stocks during the dormant season, in autumn or early spring. They can also be propagated from spores. For directions for this last method, see Mr. Robinson's book. Ferns are seldom much troubled by insect pests. *Onoclea sensibilis* is the only Fern which attracts insects to any extent. Garden slugs sometimes do damage to the smaller species.

Ferns may be purchased from a few collectors and dealers in this country, but by far the most interesting way, if possible, is to collect them one's self. It vastly increases the pleasure to be derived from the Fern garden to have each specimen a pleasant reminder of the woods, mountain, valley or swamp where it was collected. Seek out some rich locality for Ferns, and with a beginning thus made, a good collection may soon be built up. Fortunately, some of the most desirable species for cultivation are also the commonest.

Ferns are best transplanted in the dormant season, but they may be moved successfully at any time of year. For the beginner early autumn is a good time to collect, as the dormant season is approaching, and yet the various species are easily recognized, as the fronds have not yet dried off.

It is not necessary to consider the season in collecting Ferns, for they can be transplanted at any time with scarcely the loss of a single plant. Success in transplanting most native Ferns is so certain as to be a foregone conclusion, if reasonable care is given them.

When collecting get up all the roots possible and pack in slightly moistened sphagnum moss for transportation. In default of sphagnum, any moss, fern fronds, leaves or grass will do, if the journey is not a long one. Excessive moisture is objectionable in packing, as it induces the Ferns to throw out a weak, sickly growth. The fronds may be cut off without permanent injury, if it is necessary to save space in packing, although it is best to leave them on, especially with evergreen species.

To show the extreme hardiness and vitality of Ferns, it may be mentioned that some years ago, in midsummer, several species of Ferns were collected far from home. The tops were cut off, the roots wrapped in moss, and for eight weeks they were carried in a hand-bag, without the loss of a single specimen. Again, in Covent Garden Market, London, dry roots of Ferns are exposed for sale and grow perfectly

* *Spiræa pubescens*, Turcz.; *Bull. Soc. Nat. Mosc.*, v. 190. Maxim., *Act. Hort. Petrop.*, vi. 93. Franchet, *Pl. David*, 106. Forbes & Hemsley, *Enum. Pl. China*, *in Jour. Linn. Soc.*, *xxii*, 227.

* "*Alpine Flowers for English Gardens*," by W. Robinson, F.L.S. London, 1879.

well, notwithstanding the fact that they are quite dry and have few or no roots when sold.

In digging up Ferns a stout trowel is good, a dull, stout, broad-bladed knife is better, and best is a tool sold in London shops, but easily made by any metal worker. It is a gouge-shaped piece of steel riveted firmly to a hard wood handle; the tool is eleven inches long and one and one-half inches broad. It is invaluable in collecting wild plants, as it is strong and narrow, so that it is easily inserted into crevices; it is half knife, half trowel. A sharp spade and a hatchet or strong knife are of value in collecting roots of some large Ferns.

Boston. *Robert T. Jackson.*

Early Apples.

ABOUT thirty years ago I purchased a number of trees of the leading kinds of Apples in order to study their qualities and their adaptability to my soil.

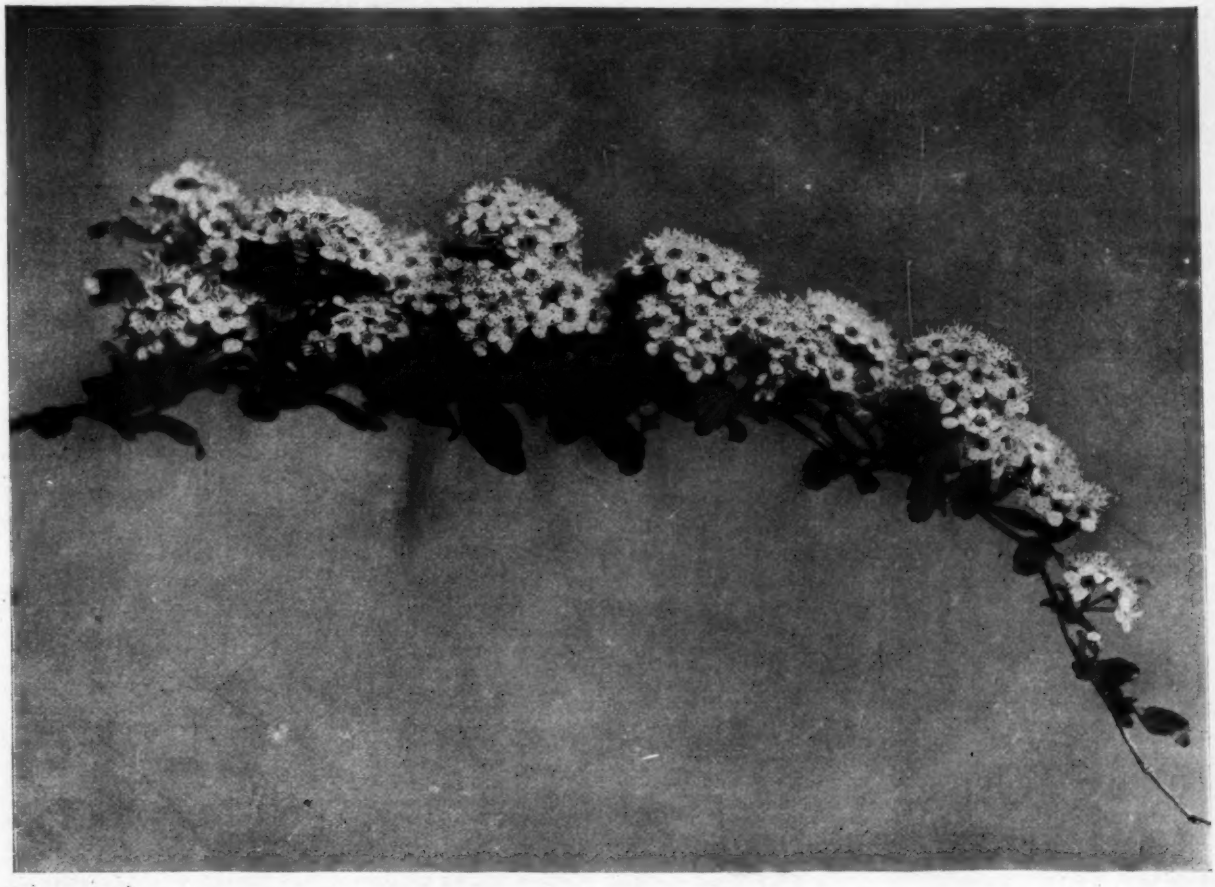

Fig. 52.—Spiræa pubescens.—See page 330.

Among the early kinds planted there were Red Astrachan, Early Harvest, Early Joe, Summer Rose, Keswick's Codlin, Duchess of Oldenburg, Carolina Red June, Primate and Saint Lawrence. These trees are all alive to-day, and a failure to get Apples every season from some of them has never occurred. Of the above named, the Codlin is the least desirable, though a prolific biennial bearer. The fruit is too acid and low in quality either for dessert or for cooking. Astrachan is also quite sour, but a far better Apple to eat than the Codlin—earlier, handsomer and better in every way. Its chief demerits are its liability to rot early, and its habit of growing in clusters, which affords a fine nesting place for the codling moth and other insects. If they could be thinned till single Apples took the place of clusters, it would no doubt obviate this difficulty to a great extent, and, perhaps, when spraying the trees with arsenites becomes general, we shall have less to fear from these insects. Early Harvest comes in at the same time, and though less acid, is smaller, and not so liable to insect depredations. Although a tart fruit, and one which may with propriety be called a Sour Harvest Apple, it will not compare in size or quality with the apple generally known by that name in this state, which is the Primate. This, in perfection, is unquestionably the best early apple we have. Its season is in July and August, and it lasts four or five weeks. Its defects are extreme liability to insect attacks and its tendency to become watery. Its crisp, tender flesh and fine flavor, added to its earliness, render it a great favorite in spite of the above objections. If there are locations where it is exempt from these drawbacks, it cannot fail to satisfy the most fastidious. It is also an early and regular bearer.

The Red June is a very handsome fruit, and the tree a fine, erect grower, but the apple lacks the tender crispness of the others, and is subject to the apple-scab, which sometimes mars a great portion of its surface. This year, however, they were finer and more beautiful than ever. The Duchess of Oldenburg is a large, fine-looking fruit, a little later than any of the preceding, and though not so desirable as a dessert fruit, is an admirable Apple to follow these for cooking purposes. It generally grows very smooth, much more so than Astrachan, Codlin or Primate. It ought to be a good market fruit, owing to its fine size and attractive appearance. The Primate is too tender in this respect, and needs to be handled more carefully than eggs; the least pressure mars the delicate skin and injures its appearance.

The Saint Lawrence is in season at the same time as the Oldenburg, and is a better Apple, being crisper, milder and more highly flavored. The flesh is white and tender, often streaked or veined with red. Its season is in August, just after Summer Rose is ripe. It is an abundant biennial bearer. The only objection I have ever found against it is that it does not last long enough.

Early Joe proved to be Summer Rose, a small to medium sized Apple of fine quality and handsome appearance, the largest specimen reaching a diameter of two to two and a

half inches. They are remarkably handsome, always sound, smooth and fair; indeed, a wormy one is hard to find and blemishes of any kind are rare. What peculiar properties the tree possesses, why it should escape insect attacks and always present the same smooth and wax-like appearance in the midst of other varieties badly affected, is another unsolved problem. This fact, together with its other good qualities, increases my appreciation of it every year, so that, all things considered, it commends itself as the best Apple of its season that I have grown. The smallest specimens of an inch in diameter are as perfect as the larger ones, which is not true of any other Apple with which I am acquainted.

Since writing the above the report of the United States Department of Agriculture has come to hand, in which the chief of the Pomological Division has this to say of the Summer Rose: "In my opinion this little favorite surpasses Carolina June, Early Harvest, and all other early Apples. It is as early as any, begins to bear soon after planting, and seldom fails to carry a full crop, even when most varieties fail. The tree has a beautiful, round head, the branches are stout but not heavy, with very distinct gray dots upon the new growth. It is essentially a family Apple, beginning to ripen with the very earliest, and continuing for about six weeks. It sells well in market, but is more especially a dessert variety. It originated in New Jersey. Size: small, two to three inches; shape: flat to round, regular; surface: very smooth; color: white, with stripes and splashes of the most delicate tints of carmine; dots, very small; basin, wide, abrupt and rather deep, regular; eye, small and colored; cavity, narrow, regular, not russeted; stem, usually quite short; core, large, closed, regular, meeting the eye; seeds, numerous, short and plump, light brown; flesh, white, with rarely a tint of pink next the skin; fine-grained, tender, crisp, juicy, except when over ripe; flavor, sub-acid, very pleasant; quality, as good as the best of the early kinds; season, June to August, in the Central States."

In conclusion, let me call attention to the unusual prevalence this season, among the early apples, of that insidious enemy, the apple maggot. The Jersey Sweet has been unfit for anything but stock food for years past from the presence of these insects, and Golden Sweets have been nearly as bad. This season Primate, Astrachan and Early Harvest have been affected. The increase of this pest gives abundant cause for alarm, and measures must be sought for checking its progress, or our early apples are doomed.

Montclair, N. J. *E. Williams.*

Hyacinths for Forcing.

SELECTIONS should be made and bulbs secured as soon now as possible; the sooner ordered the better the stock will probably be, and the prices are not likely to be lower. Besides, one of the chief points to observe in forcing Hyacinths is to have them potted early, so as to give them a long season to fill the pots full of roots before winter sets in. Well-rooted Hyacinths usually throw up perfectly developed, strong flower spikes; poorly-rooted bulbs produce malformed spikes or often fail altogether; indeed, no poorly-rooted Hyacinth is fit for early forcing. Many growers pot Hyacinths for succession, say, a lot about the first of September, and others at intervals of three or four weeks till the end of October, but this plan has no advantages. Some varieties naturally flower earlier than others, and, with a judicious selection of varieties when forcing time comes, and by introducing the earliest kinds first to the forcing-house, a continuous supply can be maintained from the first of February till April.

The deep Hyacinth pots are the best, but ordinary flower pots are good enough. One bulb in a five-inch pot, or two or three bulbs in a six-inch pot are sufficient. In this way Hyacinths can be used to advantage as pot plants in the window or green-house. But florists who grow Hyacinths for cut flowers only, seldom pot them at all, but grow them in flats, three to four inches deep, and of any convenient size. The bulbs are set one or two inches apart.

Any fresh, fibrous, loamy soil, such as is used for pot-plants, will answer for Hyacinths, but a little extra sand helps it. Rotted sods, with one-fourth its bulk of well-rotted cow or barn-yard manure or leaf soil and one-fourth of sharp pit or river sand, is a capital compost. Be cautious about using much manure in the soil; rather apply stimulants from the surface after the bulbs are started in the forcing-house. And never use fresh, wet or pasty manure.

All bulbs will grow and bloom well if in potting they are buried in the soil, as is the practice with Freesias, Alliums and Crocuses, and nearly all of them will flourish as well if the bulbs are partly above ground, as Cyclamens and Hyacinths are usually grown. In potting, place the Hyacinth bulbs two-thirds their depth in the soil, and throw a dash of clean sand under and about them to induce ready rooting and lessen any tendency to decay.

After potting them water from above through a fine rose and place them close together in some cool place (but not under trees) out of doors, bank them over with four or five inches of earth, sand or ashes, and let them stay there till November, when they may be taken indoors to a cool part of the cellar or shed, and there again covered with earth, cocoa-nut fibre, half decayed leaves, or other material, but the covering now need not be so deep as it was out of doors. Never allow frost to reach the bulbs; at the same time keep the temperature of the place where they are stored below 45°.

By the first of January some of the bulbs will begin to grow a little. A few of the most advanced may then be brought into the green-house, and kept for the first eight or ten days in a shady place and in a temperature of 45° to 50°. After that time remove to a warmer temperature, say 60° to 65°. But until growth advances pretty well, do not place them in a light, sunny place; it is a good plan to invert a flower pot over newly exposed crowns for a week or more, till the foliage and flower spike grow up a little and assume a greener color. High, collar-like bands of stiff paper or tin are used for the same purpose. After the Hyacinths come into bloom it is well to remove them to a moderately cool room or green-house, say 45° to 50°, in order to stiffen the stems and prolong the duration of the flowers.

Catalogues are filled with varieties of Hyacinths, and it often is hard to choose the most serviceable sorts. Those mentioned in the annexed list are all excellent and well-tried varieties for cultivation in pots. The double varieties are not as desirable as the single ones, and there are not many good yellow varieties.

SINGLE-FLOWERED HYACINTHS. — White. — Alba maxima, Baron Van Thuyl, La Grandesse.

White, with rose shade.—Grandeur à Merveille.

Light red.—Charles Dickens, Fabiola, Lord Macaulay, Mrs. Beecher Stowe.

Dark red.—Amy, Garibaldi, Pelissier, Von Schiller.

Blue.—Charles Dickens, Czar Peter, Leonidas, Lord Derby.

Dark blue.—General Havelock, King of the Blues, Sir Henry Barkley, William the First.

Yellow.—Ida, Bird of Paradise, Obelisk.

DOUBLE-FLOWERED HYACINTHS.—White.—Florence Nightingale, La Tour d'Auvergne, Prince of Waterloo.

Rose.—Grootvoorst, Lord Wellington.

Dark red.—Louis Napoleon, Sans Souci, Waterloo.

Light blue.—Blocksburg, Rembrandt, Lord Nelson.

Dark blue.—Garrick, Laurens Koster, Louis Phillippe.

Yellow.—Goethe, Jaune Supreme. *William Falconer.*

Glen Cove, N. Y.

Notes from the Arnold Arboretum.

Tilia dasystyla (*T. euchlora* of C. Koch, a name which he thought more appropriate than the much older one of *dasystyla*), is certainly, in foliage at least, the handsomest of all the Lindens. The ample leaves are thick and somewhat leathery, dark, deep green and beautifully shining on the upper surface, while the lower surface is paler green, with rather small tufts of light brown hairs in the axils of the veins. The young branches are conspicuous from the bright green of the bark which covers them. This tree is a native, probably, of the mountains of Asiatic Turkey and of the Caucasus. It is not very often seen in cultivation, although of late years it has been somewhat planted in Berlin and other German cities, and it is occasionally met with in English nurseries. Here the plants, although still young, are perfectly hardy; they have not flowered yet, and, of course, give no idea of the habit this tree will assume here, or of its probable value in American plantations. Has any one else planted this tree in the United States? If so he will confer a favor upon the Editor of this journal by communicating to him the results of his experiences with it.

The Sorrel Tree, or Sour-wood (*Oxydendrum arboreum*), sometimes called also the Lily-of-the-Valley tree, on account of the shape and color of its flowers, is now blooming. It is the *Andromeda arborea* (the first name) of some of the old collections. The Sour-wood is hardly more than a tall shrub at the north, here rarely attaining a height of more than ten or twelve feet, but in the south, in the mountain forests of Carolina and Tennessee, where it grows in its greatest perfection,

it becomes a slender tree, often fifty feet high. It has deciduous, membranaceous, lanceolate leaves, four to six inches long, and an inflorescence consisting of a spreading panicle of one-sided, drooping, many-flowered racemes, terminating the leafy branches of the season. The pure white, bell-shaped flowers are a quarter of an inch long. It is surprising that this beautiful plant is now so rarely found in gardens. Its handsome, white flowers open at a season when few trees are in bloom, while the brilliant colors, unsurpassed, perhaps, by those of any other American plant, which its leaves take on in autumn, make its cultivation doubly desirable. The name Oxydendrum is derived from two Greek words, signifying sour and tree, and relate to the acid flavor of the leaves.

Another plant peculiar to the mountain forests of the Southern States, and too seldom seen in gardens, *Clethra acuminata*, is now in bloom. It is a tall shrub, sometimes eighteen or twenty feet high in the high southern valleys, but at the north rarely attaining half that size. It has large leaves, four to seven inches long, and nodding, solitary racemes of yellow-white flowers, shorter than the caducous bracts. This plant is perfectly hardy here. It is less beautiful, however, than the northern representatives of this genus, the familiar Sweet Pepperbush, which just now is the chief ornament of northern swamps, which it enlivens with its lustrous, dark green foliage and handsome, upright racemes of pure white, spicily-fragrant flowers. This is one of the handsomest shrubs found in North America; it is easily cultivated, and thrives in any good garden soil. Some attention, of late years, has been directed to the value of the Clethra as a garden plant, and it is now found occasionally in commercial nurseries.

Callicarpa purpurea, a member of the Verbena family, is now in flower. It is a shrub three or four feet high, with erect and rather rigid branches, opposite, ovate-acuminate leaves, and axillary cymes of small, inconspicuous purple flowers, which would hardly entitle this plant to a place in the garden. The inconspicuous flowers, however, are followed in the autumn by numerous bright purple glossy fruit which quite cover the branches, making this plant and the other species of the genus exceedingly beautiful and attractive objects. *Callicarpa purpurea* is a widely distributed plant from Japan to India, and is practically hardy here. The stems are sometimes killed back in severe winters nearly to the ground, but they always spring up again in time to produce the late flowers which do not appear until the early weeks of August. There is an American species of this genus (*C. Americana*) found from Virginia to the Keys of Southern Florida, generally near the coast, Texas and the West Indies, which unfortunately is not hardy at the north, as it is in fruit a more showy plant even than its Asiatic congener. *Callicarpa* is derived from two Greek words, meaning beautiful and fruit; and these plants are sometimes called French Mulberries, for no very apparent reason. The Japanese species is easily cultivated, requiring no special soil or treatment; and it can be easily raised from seed, which are produced in abundance and germinate freely.

Rosa Beggeriana, var. *genuina*, is a wild Rose of central Asia which has the merit of keeping in bloom here all summer long. Its introduction into cultivation is due to Dr. Aitchison, botanist of the late Afghan Boundary Survey who found it "a common shrub at the western extremity of the Kuram district and throughout the Hariáb, in vicinity of streams and water courses; it is also very common near cultivation, where it forms natural hedges along the various channels of irrigation, at an altitude of from 4,000 to 9,000 feet. It forms a bush of from four to six feet in height, the latter in more favored localities. When in bloom it is covered with a mass of pure white small flowers. The fruit is little larger than an ordinary pea, at first orange-red, when fully ripe of a deep purple-black. The shrub is briar-scented. This species is employed, as well as *R. Eglanteria* and *R. Ecæ*, the Gooseberry, and Hippophæ, in forming hedges in the Hariáb district; and is much browsed by cattle, especially goats."*

This Afghan Rose forms here a stout, tall bush, five or six feet high, with slender and rather flexible branches, without prickles, and sparingly armed with slender, slightly recurved spines. The leaves, which are composed of three or four pairs of small, oval, sharply serrate leaflets, are pale gray-green. The hardiness of this plant and its habit of blooming continuously throughout the season, make it a useful, as well as an interesting, addition to single Roses.

There is no genus of plants hardy here which contains so many shrubs, with handsome flowers appearing in August, as Hypericum or St. John's Wort. There are a number of American species in flower in the collection now; but as drawings of several of these have been made, and will be published in future issues of GARDEN AND FOREST, they need not be named even at this time. A few foreign species, however, are worthy of mention. The handsomest of these is *H. calycinum*, a native of south-eastern Europe, and popularly known as Aaron's Beard or the Rose of Sharon. It is a dwarf plant, spreading rapidly by creeping, woody root-stalks, with simple stems, barely a foot high, and large, crowded, ovate or oblong, obtuse, dark green leaves, covered with small pellucid dots. The flowers are bright yellow, three or four inches in diameter, two or three together, upon the summits of the branches, or sometimes in corymbs of five or six. In England this plant is often used to cover the ground in shrubbery beds, for which purpose its compact habit, almost evergreen foliage, and power to spread rapidly, admirably adapt it. But, unfortunately, here it is not entirely hardy; and the stems, in spite of winter protection, are often killed back to the ground. The roots, however, survive the most severe winters, and the annual killing back, while it prevents the plants from spreading and so largely destroys their usefulness for clothing wide stretches of naked ground, does not prevent them from blooming every year, or destroy their beauty for the herbaceous border or the margin of the shrubbery. The only Japanese shrubby species of Hypericum is *H. patulum* (*H. Euralum* of some collections). It is a hardy plant here, with slender, smooth, spreading purple branches, not more than two feet high, ovate-acute, entire, revolute leaves, and usually solitary, pale yellow, somewhat cup-shaped flowers. Although less showy than some of the American species, *H. patulum* is one of the most delicate and graceful of all the Hypericums, and one of the best of summer-blooming shrubs for the rock-garden.

Androsæmum hircinum (*Hypericum hircinum*), the Goat-scented St. John's Wort, is a very showy plant in flower, with erect stems, two or three feet high, winged branches, ovate-lanceolate leaves, somewhat emarginate at the base, their margins glandular, and very large, pale flowers, with narrowly acuminate petals and long styles. The strong and disagreeable odor of the flowers, to which this plant owes its common name, makes this species, in spite of their profusion and individual beauty, less attractive than many of the other St. John's Worts. There is in the collection a dwarf variety (var. *minor*), a compact and handsome little plant identical with the species, except that it is smaller in all its parts. *Androsæmum hircinum* is a native of southern Europe from northern Spain to the Grecian Islands, and, in spite of its southern origin, is perfectly hardy here.

August 13th. *J.*

*Aitchison, *Jour. Linn. Soc.*, xix, 161.

The Forest.

The Care of Woodlands.

To the Editor of GARDEN AND FOREST:

Sir.—I read a great deal of the importance of planting forest trees and of maintaining forests, but I can find no definite instruction for the care of woodlands. I have two hundred acres of fine wood, but it yields me nothing. How is this property to be made increasingly productive? Can you give me some practical advice or tell me where I can find it?

Baltimore, Md. *Stewart Brown.*

[No question is more often asked the editors of this journal than how natural woods should be treated in order to make them yield the greatest profit. It is, of course, impossible to do more than explain a few of the general rules which can be universally applied in the management of woods, with the understanding that each particular piece of woodland or forest requires special study and special treatment, dependent upon its character and condition, the nature of the soil upon which it stands, and the crop which it is desired to obtain from it. A forest of deciduous trees—especially in this country, where a large number of different species are almost universally associated together—is more difficult to manage than one composed of Conifers, which usually grow gregariously, and are, moreover, little dependent upon artificial thinning and pruning. The operations of scientific forestry are all directed to the perpetuation of the forest. They are based on the principle that trees can be grown on certain land more profitably than any other crop, and that this fact being established, rural economy demands that the forest should be a permanent fixture on such land.

The operations of thinning, cutting, planting and sowing are all directed to securing the natural reproductions of the forest with the least possible expenditure of money, to which the element of time is properly considered subordinate. There are, of course, exceptions to this rule, as in the case of a forest of Conifers growing upon a level sandy plain, when it is often more economical to cut down all the trees, grub up the roots, and replant, than to allow the forest to reproduce itself naturally by means of self-sown seeds

The deciduous forests or bodies of woods now found in the more thickly settled portions of the Eastern and Northern States, and generally connected with farms, are usually of two classes: (1) Woods composed almost entirely of old trees, belonging to species of comparatively little economic value, the trees valuable for timber or for fuel having been cut from time to time when needed on the farm or to bring in a little money. The excessive pasturage to which all such woodland is subjected has prevented the growth of young trees to replace those which have been cut, and has destroyed the undergrowth which protects seedling trees, checks evaporation from the surface, where the forest-floor is not densely shaded, and by preventing the blowing away of the fallen leaves, helps to increase its coating of vegetable mould. Such woods, when they are not injured by excessive pasturage, often suffer by the rooting of hogs, which destroy many young trees, and, by selecting the sweet seeds of the White Oaks, the Chestnut and the Beech, and discarding the bitter acorns of the Black Oaks, are, in some parts of the country, gradually changing the composition of deciduous forests. The trees which remain in these old woods often show, in dead branches and dying tops, the effects of injudicious thinning. and of the exhaustion which excessive pasturage brings, sooner or later, to every forest.

(2) Coppice-woods—that is, woods composed largely of suckers, or the growth from the stumps of trees previously cut, it being the custom in some parts of the country, especially in New England, to cut a piece of woods clean, leaving the old stumps to furnish a fresh supply of trees. The disadvantages of this system are, that stump-shoots never make as long-lived or valuable trees as seedlings; that as each old stump produces several shoots, these are crowded together so that no one of them is able to grow into a good tree; that some species of trees produce shoots from the stump more freely and more vigorously than others. so that if left to themselves, these species must eventually occupy the ground, to the exclusion of all others. and that, as a stump loses its power to produce shoots, after two or three crops have been taken from it, a wood treated continually in this way must either disappear eventually or change the character of its composition. Animals are not less injurious to the coppice than to the wood in which old trees have been left standing; they devour and break down the young shoots or root them out entirely.

The first thing to be done, if a piece of deciduous woods, whatever its character, condition or extent, is to be improved and made permanently profitable, is to exclude from it rigorously all browsing animals. Then the owner must decide what sort of trees he desires his woods to be composed of principally. The nature of the soil and the character of the native vegetation should primarily determine his choice, which may depend secondarily, however, upon the purposes to which his forest-crop is to be applied, and upon probable future local demands for timber. In European countries, where the number of species of trees growing naturally is very small, the scientific forester is rarely compelled to occupy himself with forests composed of more than two different deciduous trees, the Oak and the Beech, but in American forests, where sometimes twenty or thirty species of more or less valuable trees are closely associated together in small areas, the difficulties of forest management are greatly increased, and we have still to learn how a mixed forest of many species can be most profitably worked. At present, at least, the owner must select the most valuable species among those which grow the most freely on his ground, and then, the crop being thus decided upon, devote himself to the development and the succession of the individuals of those species. The nature of the crop being thus determined upon, all the trees, in the case of woods of the class first described, not belonging to any of the species which are to be perpetuated and which have passed their prime and therefore cannot be profitably left standing, should be cut. The condition of a tree can be roughly decided by an examination of its top; when the upper branches begin to fail, it is a sign that it is no longer in a healthy condition or capable of producing much more material. A tree in scientific forestry is considered ripe and ready for the axe when the bulk of its annual increase of wood diminishes or does not increase. This information is easily obtained by means of a simple mechanical contrivance which enables the forester to measure the exact thickness of the annual deposits of wood without injury to the tree and so to determine accurately the annual increase of material. If old individuals belonging to the species to be perpetuated in the forest exist, they should be left to bear seed, from which the future forest is to spring; and the condition of these old trees can often be greatly improved and their lives considerably prolonged, by cutting away all dead branches, by shortening the others, and by reducing the heads. This process not only increases the vigor of the individual, but allows the light to penetrate to the forest-floor about it, and so enables the seed which falls to germinate and grow. Young trees, if any exist of the species selected, must from time to time be freed from the encroachment of undesirable neighbors, and the seedlings, which will soon appear after animals are excluded from the forest and light is admitted by the removal of decrepit or useless trees, must be thinned every few years. Gradually, as the young trees grow up, the remnants of the old forest may be removed—first, the unpruned trees of the non-selected species, not cut when the improvement was undertaken, and then finally, and after the ground is sufficiently stocked with seedlings, the old seed-bearing trees of the selected sorts. The management of a coppice, with the exceptions that there are no old trees to remove, and that the ground is already stocked with a growth of shoots all of the same age, is practically the same. The variety of trees of which the woods is to be composed being determined upon, their growth must be encouraged, and the others removed. When several shoots proceed from a single stem only one should be left to grow, unless it is found that a particular forest can more profitably produce posts or railroad ties than timber of larger dimensions, in which case better returns are often obtained by allowing several stems to grow up together. A mixed system is often found the most profitable in the treatment of a wood originally coppice. A certain number of trees are, at the outset, selected to grow to maturity. All the rest of the shoots are then cut away to allow these selected trees to grow without interference, and thus to get a good start. The next crop of stump-shoots grow up, preventing the growth of side branches on the standard trees, but without interfering otherwise with their development, and serving as an undergrowth and protection to the forest floor. The old stumps, after two or three crops of coppice-wood have been taken, cease to be productive, and the ground which they filled, unless it is too shaded by the standard trees, is finally occupied with a growth of seedlings.

There should be in a perfectly healthy and satisfactory forest three stories of vegetation, so to speak. 1st. A growth of tall trees, near enough together to insure the development of tall, straight stems, without low side branches, which destroy their value for timber; but not so near that their heads exclude all light from the forest floor, and so prevent the growth among them of other plants; 2d. A crop of younger trees growing under and among the last, either of the same species or of some valuable species

capable of supporting shade, and which will replace the older trees when these reach maturity; and 3d, a growth of low undershrubs and seedling trees covering the forest floor, holding the leaves which fall from above, and containing the material for future forests. The task of converting the most neglected and unpromising piece of woods into a forest of this character is not difficult in this climate. It requires only a short time comparatively, but it cannot be done without labor, and without careful study of trees, their nature and requirements.—ED.]

Correspondence.

To the Editor of GARDEN AND FOREST:

Sir.—The admirable words which have appeared in GARDEN AND FOREST upon the gardener's art have given birth to these thoughts which, perhaps, are worth a place in your columns:

The right of landscape gardening to be acknowledged as one of the fine arts, will not be denied by those who have taken time and pains to consider what is comprehended in those two words.

The first and vital element of success in landscape gardening, lies in the character and intelligence of him who undertakes it. There must be in him an intense, innate love of nature which cannot be repressed—a love which delights in all her beauties, which would bind up all her wounds, and which sympathizes in all her varying moods. It is a reality, and by a strange instinct nature recognizes the fact and adorns herself for the true hearted.

Successful floriculture and arboriculture demand an affection as genuine and self-denying in character as the culture of a little family in the home nest. Care, watchfulness, tenderness, are the elements of success, and in both cases the lack of them is not only painfully obvious, but a sure cause of failure. We are close akin to the fauna and flora of earth.

There is an idiosyncrasy peculiar to the creation of landscapes. The painter, the sculptor and the architect all deal with dead materials. Every touch of the brush, every stroke of the chisel, will produce effects which will remain until age disintegrates or untoward circumstances destroy them. The landscape gardener deals with living materials, he is *en rapport* with them, there is a mutual affinity, and if the artist proves faithful to his trust, he will achieve a living picture. His designs are planted, not painted, and it may be they will not reach their perfection for fifty years or more. They are designs which prefigure the future, and are unique prophecies.

We must also consider the breadth and extent of his work. A skilled painter may require years to perfect a painting of extraordinary size. What then shall we say of a stretch of canvas (so to speak) of hundreds of acres, every foot of which must be covered with the embodied thoughts, conceptions and imaginations of the artist? Unfortunately for him, a park, especially in cities or in their immediate suburbs, can rarely be chosen for original beauty of situation, or facility of adaptation to his plans. But there is a worse living hindrance—park commissioners and politicians who insert themselves between himself and his designs like gravel between cogwheels.

His whole work must be conceived in accordance with the laws of nature, and developed in the most perfect and enticing forms. In his creation no unsightly shadow of ugliness will be tolerated by way of contrast or relief. Contrasts indeed there must be, but such only as come from differing forms of beauty. Delicacy and grace are heightened by boldness and ruggedness.

There is another consideration which adds to the complexity of the work of a landscape gardener. No duplication, however attractive the original device may be, is allowable. No groups of trees or rocks, no lake or dell, can "have its brother," save in their natural relation to each other. The broad highways for carriages, the bridle paths and the foot paths, must be all kept severely separated, as the glimpse of a neighboring walk would be an unpermitted suggestion of limitation.

All these paths must abound with points of beauty—distant views through long vistas, distant views suddenly revealed, groves whose rich, thick foliage forms a leafy screen, indicate paths, cunning snuggeries and "delectable bowers" which those dear ones seek who are all in all to each other—and not the least beautiful, the wondrous effect of light and shadow on rock and fen, on flower and shrub, on lawn and coppice.

But this same landscape gardener is also an architect, a "*pontifex maximus*," not in the magnitude, but in the number of his bridges and in the variety and appropriateness of his plans. All this wealth of beauty and comeliness is to be created—born out of the fullness and richness of the imagination.

It is a work which none but a true artist could possibly design and achieve. *C. Allen.*

Providence, R. I.

To the Editor of GARDEN AND FOREST:

Sir.—I have read the two articles on Prospect Park with interest. Their value is impaired by the fact that they seem to be based upon information obtained from the report of last January, or prior to that date. Since January the Commission has been reorganized, and the criticisms upon its spirit and purposes were not pertinent at the time of the publication of the two articles. *Alfred C. Chapin.*

Mayor's Office, Brooklyn, August 1st, 1888.

[The criticisms to which Mayor Chapin alludes were directed to the ignorance and indifference which are responsible for the deplorable mismanagement of Prospect Park as indicated by the twenty-seventh report of the Brooklyn Park Department. Since the publication of that report the Park Commission has been reconstructed, as the Mayor states, and as suggestive of the spirit and purposes with which the members of the new Board will endeavor to discharge the important duties entrusted to them, the Mayor's letter will be read with extreme gratification.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—Although Washington Square is partially encircled by fine residences, it is seldom crossed by their occupants, and, forming the boundary line between up-town and down-town streets, is frequented almost solely by what are called the "lower classes." Indeed, one part of it is popularly known as the "Tramps' Retreat." But do these facts supply any reason why the park should be neglected by the authorities and present a very different aspect from either Union or Madison Square? If it is frequented chiefly by the poor, and, therefore, by large numbers of persons to whom it offers their only chance for refreshment and the enjoyment of any approach to natural beauty, should not particular care, instead of a conspicuous want of care, be its portion?

A Down-town New Yorker.

Recent Publications.

Historie des Plantes, par H. Baillon, Paris, Librarie Hachette & Co. The ninth volume of this classical work has appeared. It is devoted to a study of *Aristolochiaceæ*, *Cactaceæ*, *Mesembryanthemaceæ*, *Portulaceæ*, *Caryophyllaceæ*, *Chenopodiaceæ*, *Eleatinaceæ*, *Frankeniaceæ*, *Droseraceæ*, *Tamariaceæ*, *Salicaceæ*, *Batidaceæ*, *Podostomaceæ*, *Plantaginaceæ*, *Solanaceæ*, and *Scrophulariaceæ*. This volume, like its predecessors, is illustrated with beautifully executed wood-cuts, quite equal to any of the same character that have appeared in recent French botanical works. Higher praise cannot be given to them.

Number 155 of the Journal of the Linnæan Society (vol. xxiii.) is devoted to a continuation of Forbes and Hemsley's useful catalogue of Chinese plants, prepared in the herbarium of the Royal Gardens at Kew, and which is now brought down to Compositæ. Great interest is attached to this catalogue, because it contains the new plants recently discovered by Henry and other Englishmen in the central, mountain region above the great cataract of the Yangtse, or about 1,500 miles from the coast. This region, which until recently has been quite unknown, botanically, proves to be extraordinarily rich in new genera and species, and with the Yun-nan district to the south-west of it, of whose richness the Abbé Delavey has already given us a good idea, is now the best field for botanical exploration. It may be expected, too, to furnish a large number of hardy and interesting plants, especially trees and shrubs, to European and American gardens, as the climate, judged by the latitude and elevation of this region, is probably not very unlike, although somewhat less humid than that of the high Alleghany Mountain region of our Southern States. Mr. Hemsley describes, in the present issue of the catalogue, seven new species of Viburnums, of which one is said to attain a height of thirty feet, and a new tree with the

flowers of a Viburnum, but with digitally compound leaves, for which a new genus, Actinotinus, is proposed (Hook, Ic. pl. xviii, *t.* 1740). No less than six new species of Lonicera are described, of which one at least, *L. fuchsioides* (*t.* 9), recalling in general aspect some of the Andean species of Fuchsia, should prove a real addition to garden shrubs.

There are interesting additions, too, to *Rubiaceæ* and *Valerianaceæ*, although proportionately less numerous than those already mentioned, and of much less horticultural interest. The publication of this catalogue cannot fail to stimulate the study of botany and the collection of plants by European and American residents in China, where, with the single exception of central Africa, there is now certainly more to learn about plants than in any other part of the world.

Notes.

Petunias and Drummond's Phlox are used largely in bedding at New England sea-side resorts. Both of these plants seem to flourish in the salt air.

M. Naudin finds that *Eucalyptus coccifera*, *E. anigera* and *E. cordata* are the hardiest of the great collection of Eucalyptus tested by him in the gardens of the Villa Thuret.

It is said that Mr. Gladstone owns a large tract of land on the Canada shore, commanding a fine view of Niagara Falls, which he refused to sell when the Canadian Reservation was formed.

It is stated in *Nature* that one of the largest Pine trees (*P. sylvestris*) ever grown in Sweden has recently been cut. It measured over 120 feet in height, and was 12.5 feet in diameter two feet from the ground.

The fact that the dried fruit product of California has increased from 5,070,000 pounds in 1383 to 26,605,000 pounds in 1887, gives some idea of the marvelous development of the fruit-growing industry of the State.

The Wisconsin State Horticultural Society offers liberal premiums for seedling Apples which will endure the trying climate of that region, and energetic search for chance seedlings that may be hardy is being made, with efforts to learn their history.

Hieraceum aurantiacum, the European species, which has proved a troublesome weed to farmers in some parts of this State, especially in the neighborhood of Albany, has now appeared in Marion, on the shores of Buzzard's Bay, in Massachusetts.

A correspondent, writing to an English horticultural journal, describes a specimen of *Hydrangea hortensis* that he saw at a flower-show at Chichester. It was growing in a twelve-inch pot, and bore 100 heads of bloom, many of them as large as those commonly seen on single-stemmed market plants.

From the last annual report of Sir R. Schomburgh, director of the Botanic Garden at Adelaide, in South Australia, just received, it appears that the so-called Japan Clover (*Lespedeza striata*), now such an important and valuable forage crop in our south Atlantic States, does not promise to be valuable in south Australia, where the climate, doubtless, as it is in the Mediterranean Basin, is too dry for it.

The discovery of two new enemies of the Asparagus beetle is announced in the *Annales de la Société Entomologique de France*—one of them an internal parasite, which doubtless has had an important influence in controlling the numbers of the beetle. In making a note of this in *Insect Life*, the editors say that up to the present time not a single natural enemy of this insect has been discovered in America, although the beetle is doing much damage and extending its work over a larger area every year. The obvious suggestion is made to import this parasite from France and give it a chance to prey upon the beetles.

As one might expect, a poet who loves nature, often, in a word or two, depicts the character of a tree or flower more effectively than do pages of commonplace description. For example, in speaking somewhere of the Larch, Wordsworth notes the beauty of its vivid light green in early summer and then remarks upon the contrast this offers to that "death-like character in winter" which is so peculiarly its own. Certainly if we were to choose from the vegetable world an image not of deadness merely but of death itself, no tree would be so appropriate as the Larch. But it took a poet's eye and pen to see and record the fact.

At a recent meeting of the Royal Horticultural Society, we read in *The Garden*, Dr. Masters showed ripe fruits of a curious monstrosity known as the Plymouth Strawberry. "It is an alpine Strawberry, in which all the parts of the flower are more or less represented by leaves. The plant was mentioned by old botanical writers, but afterwards disappeared, or was so completely overlooked, that its very existence was assumed to be a myth. Of late years, however, the plant has reappeared in several gardens, and the correctness of the old writers has been vindicated."

Florists are learning that arrangements formed of a single kind of flower, or of two or three kinds at most, are often in better taste than those in which many varieties are combined. But in disposing of our garden and wild flowers in summer we too often fail to recognize this fact. Once in a while, however, one sees an arrangement that could not be bettered. For example, an old lady recently delighted her neighbors in a Boston horse-car by the beauty of an open basket she carried. It was filled exclusively with white and pale pink Sweet Peas, not too closely crowded together, above which rose a cloud of the tiny, delicate white blossoms of the garden Galium.

The current number of *Insect Life* gives an experiment which seems to prove that the white grub, so destructive of lawns, can be easily controlled by the ordinary kerosene emulsion. A white grub (larva of *Allorhina nitida*), had been killing the grass on the Capitol grounds at Washington. The soil was infested to such a degree that an average of six worms were found to every square foot of surface. The ground was treated with the kerosene emulsion, diluted fifteen times, and kept soaked for some days. The result was the destruction of the grubs, with no injury to the grass. No doubt the ordinary white grubs (larvæ of *Lachnosterna*) would be affected in the same way.

Mr. A. A. Crozier writes to *Agricultural Science* to advise the growing of samples of grasses and other forage plants in hills, rather than in small plats or short rows, as is usually done. This brings the kinds near together for comparison, yet leaves them distinct so as to readily catch the eye. The quantity is sufficient to identify the species, and as the plants have better opportunity to develop, the habit of growth is better shown. The hills should be far enough apart to permit horse cultivation, for land is cheaper than labor. The kinds planted will be likely to be so prominent in the hills that ordinary hands may be entrusted to weed them. As usually grown, grass plats become so filled with weeds that their value to the public is greatly impaired. It is well in planting to leave vacant spaces for kinds to be afterward obtained. These may be occupied temporarily with duplicates or with other crops.

The exhibition of the Massachusetts Horticultural Society on August 25th was notable for the display of seedling Gladioli, which has probably never been equaled in the United States. Mr. J. Warren Clark showed a large collection of his new seedlings, in which were a remarkably large proportion of light colors, and the much-sought-for yellows. This collection showed, to a marked degree, the influence of the blood of *G. purpureo-auratus*, or rather of its offspring, the so-called Lemoine race, in the handsome, dark-colored blotch on the lower segments of the perianth, which has always been supposed to mark the descendants of that species. Mr. Clark's collection was remarkable for uniformity of excellence and striking variety of color. Mr. W. E. Endicott, of Canton, exhibited eight Gandavensis and four Lemoin seedlings, with flowers of extraordinary size and beauty. In a small collection staged by Mr. H. B. Watts, of Leicester, was a seedling raised from a Lemoine variety crossed with a Gandavensis which showed no trace of the dark blotch which has heretofore been an unfailing indication of the potent Purpureo-auratus blood—an exception worthy of record. Mr. R. T. Jackson, of Dorchester, showed a number of seedlings obtained by crossing varieties of *G. Gandavensis* with *G. dracocephalus*, a species from the Cape of Good Hope, with brownish-yellow flowers. This new race, although hardly "fixed" as yet, is full of promise. The plants are wonderfully vigorous, growing to a much greater height than either of their parents, and flowering freely. The coloring of the flowers is, as a rule, brilliant; and they all show the Dracocephalus parentage in the hood-like upper divisions of the perianth, and in the long, narrow, central lobe of the lower division. The improvement of the Gladiolus and the raising of new seedlings now largely occupies the attention of some of the most intelligent and progressive horticulturists of New England.